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09/679,330	10/04/2000	Mordechai Mushkin	2681/OH750	6569

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EXAMINER	
TSEGAYE, SABA	

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/679,330	Applicant(s) MUSHKIN ET AL.
	Examiner Saba Tsegaye	Art Unit 2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) *12-16* is/are withdrawn from consideration.

5)☒ Claim(s) *23-33 and 39-47* is/are allowed.

6)☒ Claim(s) *1-11,16-22 and 34-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 1-47 are pending. Claims 23-33 and 39-47 are allowed; claims 1-11, 16-22 and 34 are rejected and claims 12-16 are withdrawn. Applicant is requested expressly to cancel the withdrawn claims 12-16.

Claim Rejections - 35 USC § 112

2. Claims 1-11 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 37, the use of "synchronization pulses" in line 13 in addition to "synchronization signals" would indicate that these are two different limitations. It is not clear whether or not this is the case.

Claim Rejections - 35 USC § 103

3. Claims 16-22, 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson et al. in view of Yonge, III et al. and Duch et al. (US 5,987,024).

Regarding claim 16, Wilson teaches a media access controller for controlling access by a node to a media connected thereto (see figures; 1 and 2, and specifically the bus switch 5 in figure 2 that controls the TX/RX access), comprising:

a synchronization signal generator adapted to generate a synchronization signal and subsequently transmit the synchronization signal onto the media during a predetermined

synchronization time slot (referring to figure 3, the Manchester encoder 6 inherently is a synchronization signal generator adapted to generate and subsequently transmit a start packet 19 during the predetermined first time slot 21 of each frame 20);

a synchronization mechanism adapted to achieve synchronization between a particular node and other nodes, the synchronization mechanism operative to control the generation of the synchronization signal by the synchronization signal generator (a synchronization mechanism that uses the start packet to synchronize the stations of figure 1 throughout the summary of the invention);

a timing mechanism operative to produce a timing signal derived from a plurality of received synchronization signals (deriving timing from. the start packets which are used as a synchronization signals in lines 62-66 in column 1).

However, Wilson fails to teach an occupation signal, or a MAC associated with the occupation signal; and transmitting, on a frame-by-frame basis, synchronization signals onto the media.

Yonge teaches a frame occupation signal generator adapted to generate a frame occupation signal when the node obtains access to the media; and a media access controller for coordinating access to the media (MAC unit 18 as shown in figure 1 provides for contention-free media access and control as taught in 21-23 in column 11 where the access control includes a VSC mechanism that has a value that is set to indicate that the media is busy as taught in lines 21-29 in column 19 and it is inherent that MAC unit 18 include a generator adapted to generate this VCS busy signal), and access to the media is not permitted as long as the presence of a frame

occupation signal is detected on the media (if the VCS value is non-zero the medium is busy and the transmitter waits until value is zero or not busy, see lines 26-30 in column 27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wilson's media access controller to add a busy signal as taught by Yonge. One would have been motivated to make this modification to extend the use of Wilson's controller beyond proprietary networks and allow its use on the widespread CSMA networks.

Duch teaches an ad hoc wireless network in which nodes communicate packets periodically over a plurality of frames of time without a central controller (transmitting, on a frame-by-frame basis, synchronization signals onto the media; see column 3, line 2-column 4, line 67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wilson's media access controller to transmit synchronization signals on frame-by-frame basis as taught by Duch. One would have been motivated to make this modification allows networks to become a self-synchronizing network and avoids communication delay between nodes.

Regarding claim 17, Wilson teaches the controller according to claim 16, and further teaches the controller comprises a transmit/receive interface adapted to interface the media access controller to transmit circuitry and receive circuitry (TX/RX driver adapted to interface bus switch 5 as shown in figure 2).

Regarding claim 18, Wilson teaches the controller according to claim 16, and further teaches the controller comprising a transmit/receive controller adapted to manage the transmission and reception of data between the an application processor and transmit circuitry and receive circuitry (DSP 7 operated in conjunction with application instructions in memory 10 used to control the bus switch 5 and transmit/receive functions in TX/RX driver 4 as shown in figure 2).

Regarding claim 19, Wilson teaches the controller according to claim 16, and further teaches that the timing mechanism is adapted to average the timing of a plurality of individual synchronization signals transmitted by other nodes (clock 7' which adjusts the station timing of the stations when it receives a start packet 19).

Regarding claim 20, Wilson teaches the controller according to claim 19, and further teaches averaging is achieved by time averaging the output of a matched filter adapted to a synchronization signal (referring to figure 2, the Manchester decoder in conjunction with the IFL receives and filters start packets that are used as synchronization signals and allows DSP 7 via interface bus 17 to recognize delays or early reception of start packets and adjust the clock rate as needed, see lines 51-54 in column 2).

Regarding claim 21, Wilson teaches the controller according to claim 16, and further teaches that the synchronization mechanism comprises processing means operative to:

listen to the media for a predetermined length of time while attempting to detect synchronization signals from other nodes (individual stations wait a certain time period to see if another start packet of a frame occurs where the time period corresponds to an integer multiple of the duration of a frame, see lines 18-22 in column 4, to detect a start packet that is employed by all stations as a synchronizing signal, see lines 62-66 in column 1);

if synchronization signals are detected, derive a timing signal from the synchronization signals (if the start packet is detected using this as the basis for the respective station clock and to derive timing for the respective station, see lines 60-66 in column 1);

align the clock in a particular node in accordance with the timing signal (synchronizing the individual stations with a fixed phase relationship via start packets that is synchronized anew with each transmission, see lines 14-20 in column 2, and adjusting the clock and clock pulse frequency based on the actual arrival time of a. start packet, see lines 41-46 in column 2);

transmit synchronization signals into the media at specific points in time (transmitting the start packet with a specified repeat frequency, see lines 53-54 in column 1);

listening to the media when the synchronization signal is not transmitted and attempting to detect synchronization signals transmitted by other nodes (noticing an absence of a start packet, see lines 13-14 in column 4 and attempting to detect start packets from other stations see lines 5-44 in column 4); and

if synchronization signals are not detected, transmit synchronization pulses onto the media at particular points in time and waiting for other nodes to join the network (each station which notices that a frame is absent sends a start packet to the medium, see lines 23-25 in

column 4 with a specified repeat frequency and waiting for other stations to accept it as the new master see lines 42-44 in column 4).

Regarding claim 22, Wilson in view of Yonge teaches the controller according to claim 16, and further Wilson teaches that the frame occupation signal generator is adapted to periodically transmit the frame occupation signal onto the media at the same point in time (Wilson teaches periodically transmitting signals at the same point in time that is an assigned time slot 21 in each frame 20 of figure 3).

Regarding claim 34, Wilson teaches a node connected to a media (stations A through K in figure 1), comprising: a media coupling circuit adapted to electrically interface the node to the media (TX/RX driver 4 of figure 2 adapted to electrically interface the station to media 2 and 2' of figure 1);

an application processor for executing an application program (DSP 7 in conjunction with memory l0as shown in figure 2);

a media access controller (bus switch 5 of figure 2) comprising:

a synchronization signal generator adapted to generate a synchronization signal and subsequently transmit the synchronization signal onto the media during a predetermined synchronization time slot (referring to figure 3, the Manchester encoder 6 inherently is a synchronization signal generator adapted to generate and subsequently transmit a start packet 19 during the predetermined first time slot 21 of each frame 20);

a synchronization mechanism adapted to achieve synchronization between a particular node and other nodes, the synchronization mechanism operative to control the generation of the synchronization signal by the synchronization signal generator (Wilson teaches a synchronization mechanism that uses the start packet to synchronize the stations of figure 1 throughout the summary of the invention);

a timing mechanism operative to produce a timing signal derived from a plurality of received synchronization signals (Wilson teaches deriving timing from the start packets which are used as a synchronization signals in lines 62-66 in column 1);

a transmit circuit adapted to receive a data stream from the media access controller for transmission onto the media (transmit portion of TX/RX driver 4 adapted to receive a data stream from bus switch 5 in figure 2); and

a receive circuit adapted to output a data stream received over the media to the media access controller (receive portion of TX/RX driver 4 adapted to output a data stream received over media 2 of figure 1 to bus switch 5 in figure 2).

However, Wilson fails to teach an occupation signal, or a MAC associated with the occupation signal; and transmitting, on a frame-by-frame basis, synchronization signals onto the media.

Yonge teaches a frame occupation signal generator adapted to generate a frame occupation signal when the node obtains access to the media; and a media access controller for coordinating access to the media (MAC unit 18 as shown in figure 1 provides for contention-free media access and control as taught in 21-23 in column 11 where the access control includes a VSC mechanism that has a value is set to indicate that the media is busy as taught in lines 21-29

in column 19 and it is inherent that MAC unit 18 include a generator adapted to generate this VCS busy signal); and a media access controller for coordinating access to the media MAC unit 18 of figure 1, that access to the media is not permitted as long as the presence of a frame occupation signal is detected on the media (if the VCS value is non-zero the medium is busy and the transmitter waits until value is zero of not busy, see lines 26-30 in column 27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wilson's media access controller to add a busy signal as taught by Yonge. One would have been motivated to make this modification to extend the use of Wilson's controller beyond proprietary networks and allow its use on the widespread CSMA networks.

Duch teaches an ad hoc wireless network in which nodes communicate packets periodically over a plurality of frames of time without a central controller (transmitting, on a frame-by-frame basis, synchronization signals onto the media; see column 3, line 2-column 4, line 67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wilson's media access controller to transmit synchronization signals on frame-by-frame basis as taught by Duch. One would have been motivated to make this modification allows networks to become a self-synchronizing network and avoids communication delay between nodes.

Regarding claim 35, Wilson teaches the controller according to claim 34, and further teaches that the timing mechanism is adapted to average the timing of a plurality of individual

synchronization signals transmitted by other nodes (clock 7' which adjusts the station timing of the stations when it receives a start packet 19).

Regarding claim 36, Wilson teaches the controller according to claim 35, and further teaches that the averaging is achieved by time averaging the output of a matched filter adapted to the synchronization signal (referring to figure 2, the Manchester decoder in conjunction with the IFL receives and filters start packets that are used as synchronization signals and allows DSP 7 via interface bus 17 to recognize delays or early reception of start packets and adjust the clock rate as needed, see lines 51-54 in column 2).

Regarding claim 37, Wilson teaches the controller according to claim 34, and further teaches that the synchronization mechanism comprises processing means operative to:

listen to the media for a predetermined length of time while attempting to detect synchronization signals from other nodes (individual stations wait a certain time period to see if another start packet of a frame occurs where the time period corresponds to an integer multiple of the duration of a frame, see lines 18-22 in column 4, to detect a start packet that is employed by all stations as a synchronizing signal, see lines 62-66 in column 1);

if synchronization signals are detected, derive a timing signal from the synchronization signals (if the start packet is detected using this as the basis for the respective station clock and to derive timing for the respective station, see lines 60-66 in column 1);

align the clock in a particular node in accordance with the timing signal (synchronizing the individual stations with a fixed phase relationship via start packets that is synchronized anew

with each transmission, see lines 14-20 in column 2, and adjusting the clock and clock pulse frequency based on the actual arrival time of a start packet, see lines 41-46 in column 2);

transmit synchronization signals into the media at specific points in time (transmitting the start packet with a specified repeat frequency, see lines 53-54 in column 1);

listening to the media when the synchronization signal is not transmitted and attempting to detect synchronization signals transmitted by other nodes (noticing an absence of a start packet, see lines 13-14 in column 4 and attempting to detect start packets from other stations see lines 5-44 in column 4); and

if synchronization signals are not detected, transmit synchronization pulses onto the media at particular points in time and waiting for other nodes to join the network (each station which notices that a frame is absent sends a start packet to the medium, see lines 23-25 in column 4 with a specified repeat frequency and waiting for other stations to accept it as the new master see lines 42-44 in column 4).

Regarding claim 38, Wilson in view of Yonge teaches the controller according to claim 34, and Wilson further teaches that the frame occupation signal generator is adapted to periodically transmit the frame occupation signal onto the media at the same point in time (Wilson teaches periodically transmitting signals at the same point in time that is an assigned time slot 21 in each frame 20 of figure 3).

Allowable Subject Matter

4. Claims 1-11 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

5. Claims 23-33 and 39-47are allowed.

Response to Arguments

6. Applicant's arguments with respect to claims 1-11 and 16-47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saba Tsegaye whose telephone number is (571) 272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ST
September 20, 2004

HASSAN KIZOU
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